(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 May 2004 (13.05.2004)

PCT

(10) International Publication Number
WO 2004/040927 A3

(51) International Patent Classification[7]: H04Q 7/30, G10L 19/14

(21) International Application Number: PCT/US2003/034566

(22) International Filing Date: 24 October 2003 (24.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/282,831 28 October 2002 (28.10.2002) US

(71) Applicant: **QUALCOMM INCORPORATED** [US/US]; 5775 Morehouse Drive, San Diego, CA 92121 (US).

(72) Inventors: **EL-MALEH, Khaled Helmi**; 7675 Palmilla Drive, #6314, San Diego, CA 92122 (US). **KANDHADAI, Ananthapadmanabhan, Arasanipalai**; 10187 Camino Ruiz, #127, California, CA 92126 (US).

(74) Agents: **WADSWORTH, Philip, R.** et al.; Qualcomm Incorporated, 5775 Morehouse Drive, San Diego, CA 92121 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

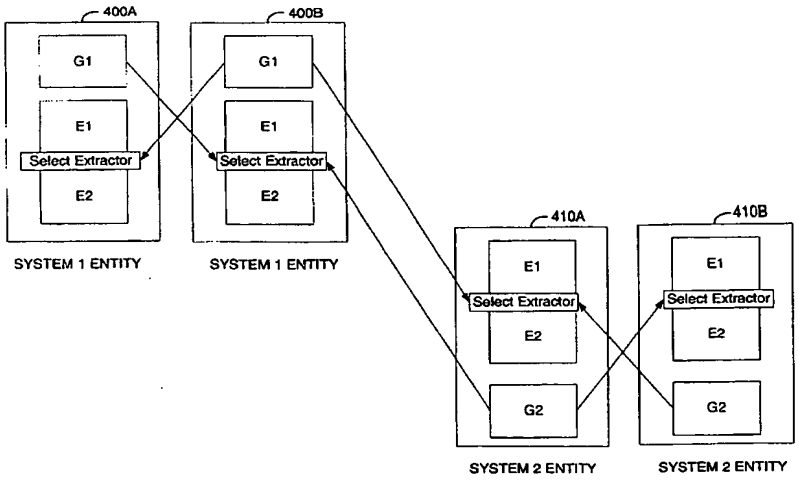
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
1 July 2004

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR TANDEM-FREE VOCODER OPERATION BETWEEN NON-COMPATIBLE COMMUNICATION SYSTEMS BY EXTRACTING INTER- OR INTRASYSTEM TFO-INFORMATION



(57) Abstract: Tandem-free vocoder operations (TFO) between non-compatible communication systems may be enabled through hardware modifications at communication elements within each system. In one aspect, each infrastructure entity in System 1 comprises an intra-system TFO Frame Generator (G1), an intra-system TFO Frame Extractor (E1) and a TFO Frame Extractor (E2) of System 2, which is non-compatible to System 1. Each infrastructure entity in System 2 comprises an intra-system TFO Frame Generator (G2), an intra-system TFO Frame Extractor (E2) and a TFO Frame Extractor (E1) of System 1. In an embodiment, intersystem TFO Frame Generators (G1, G2) are also provided. In another embodiment, intersystem or intrasystem parameters are used to determine the TFO Frame Content (820, 830), responsive to determining the source type of the TFO frame being punctured into a PCM stream (812).

WO 2004/040927 A3

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.